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*An Enlargement*

*of the Observations, formerly publisht Numb. 27, made and generously imparted by that Learn'd and Inquisitive Physician, Dr. Stubbes.*

1. **I**T can hardly be described, how those substances, formerly specified to you, *viz.* Sweet-Meats, Sugar of Roses, &c. were dissolved by the *steams* of the *Sea*; those and such like Compositions not only giving again, but being in the substantial parts so penetrated, that I did then call to mind, what M. *Garenciers* observes of Sugar, how it intenerates the flesh, and disposeth to tabidness *English Ladies* upon alteration of weather, when the Sugar, as Salts in moist weather, becomes fluid in the body, and produceth effects not discernable at other times. I doubt not but the Saline Atomes in the Sea, and in Liquors, stote in little composures, till a principle of another nature occasions their solution. And thus we see in Diseases, that it is not the bare alteration of weather, but some peculiar mixtures in the Air, that incline to, or increase Consumptions and Coughs; since oftentimes the greatest *Raines* are less fatal to such bodies, as *hazy* weather renders dangerously indisposed. All the alteration, our Sweet-Meats, and Lozenges, and Gamons of Bacon underwent, must be attributed to some peculiar principle in the Air: For, in all our Voyage to the *Barbadoes* we had not one Shower, that I remember. And if any will have the Air moist, whilst a constant *Levant* (that is, a *drying*) Wind fills our Sailes, at least during the *long reach*, how comes it to pass, that so much heat joyn'd with moisture doth not occasion *putrid Feavers*? And why in all that Journey, and after in *Jamaica*, when the Glasses for many weekes stood open and uncover'd, did not the *Lixivate* Salts of *Wormwood* and *Ash* contract any moisture? I am sure, I never set any Salts in the Sun or near a Fire, during my stay there, to preserve them, or to restore them to their coagulated forme. Nor will other *Sea-Salts* there loose much, if not kept dry by a Fire; no, nor lying on the ground. For, I have seen it kept so; yet if it immediately touch the ground, some of it will moisten a way. But I have seen *Tortoises* dry-salted, and lie on the ground  
cover'd

cover'd with salt a year, and the salt under all vicissitudes of weather never give much, or spoil the salted *Tortoise*.

2. The way of drinking *Brandy* with Water, as Sir *Christopher Wiggins* observ'd, was this. First to take a mouth-full of *Brandy*, and whilst it was yet hot in your mouth and unswallow'd, to drink the Water and so wash it down; it being his and a common observation at Sea, that it was ever wholesome to drink it so, then either mixt with the Water, or after it. For, *said he*, if you drink the Water first, it gives instantly such an impression of coldness to your Stomach and Lungs, as that it is too late to correct it by the succeeding *Brandy*. Which reason I could not but allow of; for in those parts the passages or porosities of the Body are so peryious, that what you drink, though cold, instantly dischargeth it self in sweat, or checks your constant and necessary *Diaphoresis*, before you can get the subsequent *Brandy* down. And in *Man* there is so exact a *Machine*, that a much less thing disorders him *there*, then *here*. And if a little *Brandy* should be mixt with a draught of water, it would not be effacious; the coldness of the water being more powerful in bodies so tender (as we are there if hot) to hurt them, then so little *brandy* to correct it. But the other way washes the *brandy* down first, and as that goes, it fortifies nature every where to receive and distribute the subsequent cold liquor.

3. About the *Colour* of the *Sea*, I have this to add, That as we went, and passed from a *Green* Sea to an *Azure*, in the way when it was dark colour'd (which we formerly have spoken of,) the top of each wave, as it was cast up before the Sun, shew'd it self to be *Azure*, the rest of the wave being dark-colour'd, approaching to *black*. And the like I observ'd coming home; for, though the Sea in its *dark-colour* resembled exactly what we saw before, as we went out; yet did the tops of the wave break and appear to be *green*, long before the great Waves or body of the Sea became *green*. I observ'd, that the Sea, which was *Azure*, and transparent in Sun-shiny dayes, was *black* and dark-colour'd, and much less transparent, when the Sun did not shine. But in the *Green* Sea there happens not the like Difference.

4. As to those Plants, whose roots I said were stony, it may be noted

noted, that some of their rootes are totally putrify'd, some only in part; the rest being of another kind of more Vegetable-like consistence; whilst the Boughes and Trunk are of another Nature. Several of these are to be seen at the Lord *Mordants* at *Parsons-green*, where you may see those Accretions of Stone on the Boughes. And these Accretions are often loose, and moveable, as Beads on a string. But the *Nitrous* Stone was lost in the bringing. There are also some of these Trees like Bucks-horns, but broke by the way, with their particular excrescences, that are beautify'd with stars imprinted in them.

5. Of the Water at the *Point* of *Jamaica* (concerning which I formerly noted, that at the said *Point*, wherever you digg 5 or 6 Foot, it will appear ebbing and flowing as the Tide) I shall further observe, That, though the Sand does so percolate, that you find it upon digging so deep; yet from that Sand there ariseth no steam into the Air, notwithstanding the heat of the Country. For proof hereof, I observ'd, that Men would lie all night, and sleep on the Sands without hurt. And (to take notice of that particular on this occasion) 'tis an usual thing for the *Weavill* (or fly, that breeds in Meal, Currants, Raisins, &c.) to be thus cured: After that the Sun hath heated the Sand, they spread a Sheet, and on that spread their Meal, Currants, &c. the Sand being hot under, the said Weavils or wing'd Animal (which yet flies not) retire from the bottom to the upper parts; and these being heated, they retire all into the middle, and thence, being heated, they are forc'd to run away out, and are so swept away. And if you spread the Sheet on the firm ground, though never so much heated with the Sun, it will presently grow damp there, and the *Weavils* will lodge themselves at the bottom; so as that you can never separate them any where else, but on the sand. Also in the nights I observed, that between the other ground and our pendulous *Hamacks* there gather'd not only a greater coldness \* of Air, but also moisture, than was observable at the *Point*, when we hung in the like posture. It is true, that the reason is obvious, why there should be an Aire under the narrow passage betwixt the *Hamack* and the ground, which is not ob-

\* This is the reason, that the Indians make Fires under their Hamacks.

servable *above* it; but there is also a dampness, so that I was forc'd to put two Blankets betwixt me and the bottom, whilst I had never an one to cover me a top.

6. Although I was so weak with the *paresis* after a *Bilious colick*, as not to have the use of my hands, and as little of my legs; yet at the *Caymans*, during an hour or two's stay there, I examin'd that assertion of Mr. *Lygons*, that a Tortoise hath *three* Hearts, and I found it false. For, although the resemblance of the two *auricles* be such, as also their bodies or flesh, as to deceive the un- wary observer; yet is there but *one* Heart, triangular, and fleshy; the other two are only the *auricles*, yet of the same shape and body. The two *auricles* move at a several time from the Heart, and they are distanc'd from the Heart about an inch; and the passage fleshy (as I remember) and narrow, by which the blood is infus'd into the heart. This Heart hath but *one Ventricle*; yet are there several columns of flesh and receptacles in it, such as are not in the *auricles*. I was not able to examine the way, how the Blood circulates through the Lungs in that Animal; nor the use of its Lungs, which is not *ob refrigerium*. Had I ever had my health perfectly, I intended to have made a voyage to the *Caymans* on purpose, to contemplate the Generation of *Tortoises* and *Crocodiles* there, their parts, and the manner how their Eggs are hatch'd; and I should thence have given you an account of many wonderful things. The Grass of the Sub-marine *Meadows* is not a span long, that I could observe, and is of a green approaching to yellow. They *bite* much more then they *swallow*, so that the Sea is cover'd with the Grass, where they feed at the bottom. Once in about halfe an hour they come up, and fetch one breath like a sigh, and then sink down again. And if out of the water, they breath somewhat oftner. If you hurt them on shore, as they lie on their backs, the teares will trickle from their Eyes. You may keep them out of the water 20 dayes and more, and yet they will be so fat as to be fitting meat, provided you give them twice a day about halfe a pint of Salt-water. The Fat that is about their Guts, is *yellow*, though that of the Body be *green*. The Head being cut off, dies instantly: and if you take out the Heart, the motion continues not long. But any quantity of the flesh will move, if pricked, and also

also of it self, for many houres after it is cut into quarters; and the very Joynts of the Bones of the Shoulders and Legs ( answering our *Omo-plate* and thigh, yet within the Shell ) have their motion; and even though you prick only the Fat of it. But if you place these parts of the *Tortoise* in the Sun, they presently die. The Legs die as soon, in a manner, as cut off.

7. The Eggs of *Crocodils* and *Alligators* are little bigger then a Turkey's. I thought to bring one to *England*, but it was lost. I never broke any to see the Yolk and White; but the Shell is as firme and like in shape to a Turkey's, but not spotted. I inquired into the Stone in the Stomach of a *Cayman* or *Crocodile*, and I found by the inquiry of a very observing Gentleman there, that they were nothing but several Stones, which that Creature swallows for digestion. He took out of one a piece of a Rock as big as his head: out of others he had taken 16 or 20 lesser. None regards them much there, whatever *Monardes* relateth.

8. I could not hear of any Stones found in the Gall of the Hogs there; but 'tis usual to find little Stones in their *Bladder* of several sizes, but the shapes of them ( none weighing a scruple ) were angular, and pointed with five angles.

9. *De Laet* is in the right as to his description of the *Manati*-Stone; into the nature of which Fish I would willingly have made Inquiries, had I had health to goe, where they are caught. But he is out in his *Lapis Tuberorum*. For though a *Tiburon* or *Sharke* be all one, and differ from a *Manati* or Sea-Cow; yet, by his leave, though that same be a kind of friable *calx*, when it is brought hither; yet when 'tis first taken out, it is not so, but a white substance near approaching to the nature of any Brain, and encompassed in a *Gelly* transparent. The *Gelly* dries all away, as it is expos'd to the Sun; and the white substance dries into the body, he speaks of. If my memory faile me not extreemly, it is taken out of two places over each eye; and both being usually by Seamen put into the same paper together, to dry, pass for one. That creature hath no bone in his back, as vast as his strength is; onely in his Head there are bones. His Jawes are Gristles; and he hath rowes of teeth, which are bones like Lancets, and moveable in him, to erect, or lay flat; and multiply to 3, or 4, or 5, ( perhaps more ) as he growes in years. His back-

bone is all gristly (and so are his Ribbs) yet divided into *vertebrae*. The Seamen usually cut them into Walking-staves. They and the *Dolphin* swim faster than any Ship saileth: So do the *Spanish Maccarel* also.

10. *Civet-Cats*, if you do not give them drink at all, they will not die in a longer time than a Moneth. I kept one much longer without drink. But if they drink once a Moneth, they will yeild more *Civet*, as I was told; and so, if they be fed with fish. Yet they piss much, as do Rabbits. In those places, where there is no Rain for a whole Moneth, or longer, nor any River, or Pond, Cowes lick the dew, for a supply. A Butcher kill'd a Bull in an Island, where he could have no water but what was salt: he assur'd me, that his Bladder was dryed up, so that he made very little or no water; yet he must be guessed to have lived in that Island before the *English* came thither; which was 6 yeares before he was killed.

11. The *Swallowes* in *Jamaica*, as hot as 'tis, depart in the Winter-Moneths, and the *Wild-Ducks* and *Teale* come hither then.

12. As for the *Palme-trees*, perhaps you would not imagine, that the so famed Tree, call'd a *Cabbage-tree*, is one. I assure you, it is nothing else; and all that is eaten as the Cabbage, is, what sprouted out that year, and so is tender. If eaten raw, it is as good as new Almonds; and if boyl'd, excels the best Cabbage. When that top is cut off, the Tree dies. There was one of those Trees at *Barbadoes*, above 300 foot high, as I was told for certain. This Tree will never rot, and when 'tis dryed, growes so hard, that you cannot drive a nail into it.

13. 'Tis certain, what was said formerly, that the Tobacco, which growes on *Salt-peter-Ground*, flasheth as 'tis smoaked; but 'tis a mistake, that any Tobacco growes *wilde*, in *Jamaica* at least. The same nitrous Tobacco will not come to so good a colour, nor keep so long, as other Tobacco; insomuch that the Merchants oftentimes lose all their Tobacco in the Voyage for *England*, or *Ireland*; it rotting all by the way. In the same Salt-Peter-Ground the *Potato's*, that are planted there, are ripe two Moneths sooner than elsewhere; but if they be not spent presently, they rot, the Salt-peter (as they told me) fretting the  
outward

outward skin of the root, which is thinner in that sort of ground, than in other places. The *Sugar-Canes* also in those places grow larger and faster, than in other grounds, but rot presently, if not ground; and do not boyl so well to *Sugar*.

14. In *Jamaica* the *Sugar* cures faster in *ten dayes*, than in *six moneths* at *Barbados*: And this happens in such places, as it rains for many Moneths at the same time; but you must know, that *Raines* there are sudden, and make no previous alteration in the Air before they fall, nor do they leave it moist afterwards.

15. There is an infinite variety in the Grain of Woods, and the Colours of them. Amongst others, there is a Tree, call'd a *Bastard-Cedar*, whose Wood is really so porous (though you would not guess so upon view) that being turn'd into Cups, Wine and Brandy will soak through at the bottom in a short time.

16. There are many kinds of wood in the *Indies*, besides that of the *Acajou* or *Cajous*, that breed no Wormes; and there is a Tree, call'd *White-wood*, in *Jamaica*, of which if you build Ships, they will never breed any Worm.

17. Of the *Soape-Tree*, I have seen it grow at the *Spanish-Town*; and the Berries of it (being as big as bullets of Musquets) without any proportion of Salt-Lixiviate, or Sulphur, or Oyle, wash better than any *Castile-Soape*; but they rot the Linnen in time. The *Negro's* use them.

18. As for *Tanning-barks*, they have in *Jamaica* 3 barks to Tann with, the *Mangrove*, *Olive-bark*, and another. They Tann better than in *England*, and in 6 weekes the Leather is ready to work into Shooes.

19. The Juyce of *Manioc* or *Cassavi* is rank Poison. All Hogs and Poultry, that drink it, swell and die presently. If the root be roasted, it is no Poison, but only occasioneth Torsions in the Belly.

20. Concerning the Oyle of *Palma Christi*, the *Indians* use it for Lamps; it is a delicate, sweet and transparent Oyle: But I could never find it operate in *Physick*, notwithstanding I have given a spoonful of it, and three in a Clyster. This *Palma* does yeild an exceeding great quantity of Oyle, and, did we mind any thing, might be a Staple-commodity. The leaves applied to the head



head, give great ease to the head-ach, as I have tried in my self; and it is the onely remedy of the *Indians* and *Negro's*.

21. About the *Manchineel*-Tree, I shall only say, it is a wood of an excellent grain, equalling the *Jamaica*-wood, but large to four foot Diameter. The *Spaniards* turn it into beds, and the *English* usually flour their rooms with it in *Jamaica*; yet it is as malignant, I am told, as 'tis described.

22. The Birds, called by some *Fregati*, we call *Men of war*; their fat is good against aches, &c; so is that of *Allegators*, or the shell-fish, call'd *Soldats*, or *Souldiers*.

23. Of the *shining* or *Fire-flies* there is a great difference in *Hispaniola* and *Jamaica*, as to bigness. They can contract and expand their Light as they fly, I am sure; and their light continues some days after they are dead: So that I am not of their mind, who affirm, that 'tis the *flammula cordis* in their tail.

24. The *Wood-lice* will eat Covers and Books, though printed, as I found to my cost. Of their eating of Timber, it is true they will eat some sorts of Timber, but not all.

25. Of the *Cirons* or *Chegos* enough is said by *Ligon*. I knew a man who burnt his *Negro* alive, because he was over-run with them. When they come among the *nervous* and *membranous* parts, they are very painful, and not to be pull'd out, lest your needle touch the nerves; and in other places the hole you cut, to take them out, equals a pease.

26. I could never hear of any *Hurrican* about *Jamaica*; yet *Vincent le Blanc* saith, he was in one not far from it. I enquired of some, that had been in *Hurricanes*, if it were so cold then, as the said *Vincent* relates it? They said, they had not found it to be so cold; but yet in comparision of other times, it was much colder then. I enquired of the nature of those Tempests, whether the wind varied all the points of the *Compass*, as 'tis said? They answer'd, No; but it began always with a North-wind, and when it came East, it ceased: but betwixt the North and East-point it varied so fast, and with such a violent guff always, that it was impossible for any ship in the water to answer the Vering of the wind: Whence it hapned, that the backs of the ships are broken, and the Sails carried by the boord the masts. I saw a vessel of about 400 tun, whose back was broken, and she laid up at

*Jamaica*.

*Jamaica*. Her main Mast (which is no small one in such a ship) was wreath'd as you would wreath a *With*, in an instant, and so born by the boord, before ever they could hand a sail.

27. I know not, what news it may be to you, but to me it was no unpleasant divertisment to see a Boat ride at anchor in the main sea; which our Mariners effected thus. As we sailed for *England*, and were to double the Cape at the end of *Cuba* in order to our passing the Gulf; betwixt the two Capes of *Cartooche* towards the Main, and Cape *Antonio* in *Cuba*, there is a Current, which sometimes sets Westerly, sometimes Easterly. If it set Easterly, the ships have a speedy passage in three or four days to the *Havana*; otherwise 'tis a fortnight or three weeks sail, the ship being imbayed in the Gulf of *Mexico*. To know which way the Current sets, in calm weather, no wind at all stirring, thus they try it. They hoise out their boat, and having row'd a little from the ship, they let loose their plummet (ours did weigh 40 pounds) and sink it 200 fathom. Then though it never touches the bottom, yet will the boat turn head against the Current (which constantly runs very strongly of it self, since so much of Sea runs into the Gulf of *Mexico*) and rides as firmly, as if it were fastn'd by the strongest Cable and Anchor to the bottom. If you wonder to hear me mention a Calm thereabouts, where you would expect a constant *Levanti*-wind; I shall inform you, that 'tis no unusual thing to meet with Calms, if you approach within any distance of Land, (and betwixt these two Capes it is no very broad Sea, as the *Map* will shew you;) for though you see not any land, yet some gulf, or land-wind will so poyse the *Levanti*-wind, that you shall have a perfect Calm: so as we went away out of our course to *Jamaica*, to avoid the *Spanish* Fleet, which saild before us; though we came not near the main as we thought, yet it gave us a Calm of two days, whilst they saild on.

28. The Change of Climat and the effects of it are very sensible to our Bodies, as we approach the *Tropick*. There usually happened (as you may observe in *Purchas's* Voyages) sicknesses in our ships about that time; and as soon as the sea-men pass the *Tropick*, they still use expressions of Joy by firing of Guns in testimony of gladness for their safe arrival so far. I could not learn of the Old sea-men any other reason for the different  
condi-

condition of health, with which our ships now sail, in comparison of what our Ancestors experimented, than this: Generally all our Seamen and Passengers let blood in the Voyage before that time. Yet is not that to be done rashly, nor by all in the same degree of Latitude; for, I carefully observ'd in our ships the alteration of our bodies upon the change of Climat, and found, that the blood of the *English*, which consists of parts more gross, and is extracted from a more substantial food, *viz.* that of *Flesh*, than in other Countries, did attenuate, and the pulses in some became very lofty, full and quick; in others, slow, yet more lofty and full than before. In some there was a sense of pricking in their flesh, in some a great dulness and oppression of spirits and heaviness: after which, they pass into a condition of sweating, which pursues them afterwards for so long a time, as I mention'd. From this agitation of humours, it is easie to shew the reason, why our Ancestors fell sick, and how necessary it is to bleed, when any feels those symptoms in him: for, immediately upon bleeding the pores are open'd, and they fall to sweat; and by this course, those numbers of people, we carried over with us to *Jamaica*, arriv'd safe. Some I caus'd to be blooded in 32 degrees, some in 28, some in 24. and 23. deg. And in all our ships there died but three. In *our* ship, two had the disease, so much talk'd of, called the *Calenture*; concerning the progress of which disease I can say nothing; for they were thus cured presently. I was talking with one of them, and on a sudden he beheld *green* leaves, as he imagin'd, floating on the sea, which yet was *Azure*-coloured: after that, he began to admire the fine woods, which he fancied to be near us. I immediately gave him a Vomit of the *Glass* of *Antimony* in *Sack*; which no sooner had wrought its effect, but all those imaginations vanished. At night I gave him some Conserve of red-Roses vitriolated, Salt of Worm-wood and *Diascordium*: the next day he was blooded at the arm in the morning; and in the forehead in the after-noon. His diet was water-gruel with cream of *Tartar* in it; and also some Prunes stew'd. I could perceive nothing of any Feaver in the disease; his pulse was low, slow and equal; his temper rather colder than ought to be; so far was he from any sense of heat, or discoloration of his tongue, or thirst. The other person imagin'd nothing but Groves of Oranges and Limons, and begg'd the opportunity  
of

of a boat, to go a shore, with great earnestness; so that if not watched, perhaps, he might have leaped into the sea. The *Symptoms* were the same as in the other; only his whole body seem'd to be much colder; yet was he not sensible of any coldness in himself. I caus'd him to be vomited; and he was well in his Head, as soon as ever the vomit made him sick at the stomach, as yet not having wrought. I dieted him as the other, and only blouded him in the arm. I let them blood meerly out of caution (for else they seem'd well) and to promote Transpiration and Sweating: which succeeded according to my desire.

Undoubtedly the seat of that disease is in the stomach and those parts adjoining to it, in which the first concoction is perform'd, and 'tis highly probable, that it principally ariseth from the ill diet, by eating too much Salt-meat in Voyages; the salin steams from the stomach affecting the Brain in a peculiar manner.

As to the Cure by *Vomiting*, I shall not now explain, How Vomits work; it sufficeth, that the disease was seated in and about the Ventricle; and that in hot Countreys, as well as in hot seasons, the Rule of *Hippoc.* takes place, *Æstate per superiora*. I never saw any good effect of the most innocent Purge during my stay in the Indies, except in Chronicall distempers; nor did I ever almost give any (after frequent trials had made me cautious;) but pills that were *Antimonial*, or *Mercurius vitæ*, or *Vomitive Infusions*. And by this method I preserv'd our ships well, and effected these speedy Cures, which I think, none had before seen in *Jamaica*. It is true, of the common sort in the other ships, when we came to *Barbado's*, upon view I found many *Hydropical* and *Scorbutical*: And as soon as we came there, I caus'd all, that were any thing ill, to be vomited and purged with *Mercurius vitæ*, the *Vomitive Infusion*, and *Cambodia*; by which means, and one meals fresh meat, and some Limons sent them, all the disorder'y rabble recover'd; so that only three died, as was said before, in the whole Voyage. Nor would I doubt, again, by God's help, to convey over a far greater number with the like means and care.

*So far at present this Ingenious Observer; who perhaps may give the Reader another Entertainment of the like nature hereafter.*